Investigation No.: 12-10-013
Exhibit No.: SCE-15

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(U 338-E)

December 20, 2012, Letter From Mitsubishi Heavy Industries Regarding Repair Options

Before the
Public Utilities Commission of the State of California

Rosemead, California
May 14, 2013

MNES
SONGS Project Office
14300 Mesa Road (G55-SGR1)
San Clemente, CA 92672

December 20, 2012

MKT-NSL-120063

Mr. Edward Avella
Director – Steam Generator Repair Project
Southern California Edison
14300 Mesa Road (G55-SGR1)
San Clemente, CA 92672

Subject: "Long Term Repair and Replacement Final Option Selection"

Reference: SCE Letter SGR-L-M-MHI-121912084735

Dear Mr. Avella,

For purposes of reference, on October 11, 2012 Mr. Kadokami met with Mr. Dietrich and you in person and outlined Mitsubishi's proposed repair strategy which included both repair and replacement options. With respect to the timeline, assessment of both options was expected to occur around 2nd to 3rd quarter in 2013. On November 13, 2012, Mitsubishi received SCE's formal written request to make a final proposal for a permanent repair by November 30, 2012. After that Mitsubishi accelerated its assessments and proposed to submit technical presentation material on November 30, 2012, and to make a presentation based on it on December 4, 2012, but the submission of the letter and the meeting were postponed to allow the parties to establish the framework for discussions. In the same timeframe, on November 28, 2012 Mitsubishi received SCE's request for a "repair and/or replacement plan and schedule for both the Unit 2 and Unit 3 steam generators" by December 28, 2012.

On December 14, 2012 Mitsubishi submitted a letter to SCE providing a repair and/or replacement evaluation, plan and schedule in accordance with SCE's requests on November 13 and November 28. The evaluation, plan and schedule submitted to SCE concluded three options for long term repair of Units 2 & 3 were technically viable. On the same date we met with the SCE SGR team to explain the contents of the letter containing the repair and/or replacement evaluation, plan and schedule.

We now acknowledge receipt of your subsequent letter dated December 19, 2012, referenced above, requesting a single repair or replace recommendation by December 23, 2012. Further to your letter, and our meeting on December 14, 2012, we confirm our understanding that SCE has now requested a "final single" repair or replace recommendation. In this respect, I understand the Purchase Order requires a repair or replacement decision reached in a "mutually agreeable manner". We also understand that based on our discussion at the December 14, 2012 meeting, SCE has rejected our Option #1.

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AVB Repair Option #1

Over the past 8 months, Mitsubishi has evaluated several AVB repair options to improve the tube support conditions in the SONGS Unit 2 and Unit 3 steam generators (SG) and has performed mock-up tests to examine the practicality of installation and effectiveness of these repair options. Based on the results of technical analyses of critical factors and these full-scale mock-up tests, Mitsubishi has determined that the insertion of "thicker AVBs" is a practical and viable repair option.

In addition, improvements in the thermal hydraulic conditions of the steam generators can be made to accompany the thicker AVB repair. By changing the operating parameters within ranges provided by SCE, the thermal hydraulic conditions associated with 100% power operation can be reduced to a level below that of the Unit-3 tubes that exhibited TTW (i.e. reducing the maximum steam quality from 0.899 to 0.803 and the maximum void fraction from 0.996 to 0.989). This is accomplished by changing secondary water level, feed water temperature and RCS temperature. Such changes lower the thermal hydraulic conditions below the threshold associated with the observed TTW phenomenon (i.e. maximum void fraction >0.993).

The repair option provides for improved tube support conditions at the AVBs in the region of greatest wear and improvements to the thermal hydraulic conditions to a level below the threshold associated with TTW in Unit 3. To the best of Mitsubishi's technical knowledge, such improvements will be sufficient to address TTW as well as wear due to random vibration. While this particular repair is first-of-a-kind, many similar AVB repairs have been successfully accomplished in the past in the nuclear industry, some were performed by Mitsubishi.

Mitsubishi appreciates the comments it has received from SCE's SGR team on December 14, 2012 on our repair and/or replacement proposal. At that meeting SCE's SGR team expressed strong concerns about the feasibility of the repair option. While Mitsubishi believes it could successfully address SCE's concerns regarding the feasibility of the repair option, it would require more time for detailed discussions between the parties to be able to reach agreement.

Replacement Options #3 and #4

Mitsubishi has also commenced a parametric study for the conceptual design of a new SG configuration to achieve the maximum practical improvement in the U-bend thermal hydraulic conditions associated with SONGS 100% power operation. This study includes replacement of the SG tube bundle (lower assembly) (Option #3) or, alternatively, the replacement of the entire SG (Option #4). Design variables being considered include tube size, tube spacing, number of tubes, and the SG operating conditions. Preliminary analyses indicate that the thermal hydraulic conditions can be reduced to a level equivalent to that of currently operating steam generators.

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Optimization of thermal hydraulic conditions may require changes to some parameters such as primary side pressure loss and secondary side water mass, which may fall outside the range specified in the original CDS, and needs to be discussed with SCE. The results of this discussion will determine how much improvement can be obtained with respect to the thermal hydraulic conditions of the SGs with the replaced tube bundles or the replaced SGs. At the same time, modifications can be made to the AVB design to provide additional in-plane support to avoid in-plane fluid elastic instability and to minimize tube wear due to random vibration. The modification of the AVB design may result in it becoming a "first of a kind" which will require thorough design verification.

In addition, feasibility of on-site installation needs to be further explored for both Option #3 and Option #4.

Mitsubishi preliminarily estimates that the schedule for both of these options (i.e., the design, manufacture and delivery of either replacement tube bundles or entire new replacement SGs) would take five and a half years for the first Unit. Mitsubishi provided that preliminary schedule in our December 14, 2012 submittal.

Mitsubishi Recommended Course of Action

Mitsubishi concludes that both the "thicker AVB" repair and replacement of the entire tube bundle/entire SG are technically viable even though some additional evaluation is required. While both are technically viable, there are many other considerations – e.g., cost, schedule, licensing, plant license renewal and SCE's various stakeholder's acceptance among others – that affect the decision whether to implement the repair or the replacement of the entire tube bundle/entire SG. The repair can be accomplished in a shorter time period and at lower cost compared to replacement of the entire tube bundle/entire SG. However, replacement of the entire tube bundle/SG provides the ability to make more extensive design changes to address the tube support conditions and thermal hydraulic conditions that caused the TTW at SONGS, as requested by SCE.

In conclusion Mitsubishi recognizes that SCE has expressed concerns about the repair option and that additional time would be required to address such concerns. Moreover, under the Purchase Order any warranty repair or replacement must be mutually agreeable. In accordance with the Purchase Order, Mitsubishi agrees to the replacement option as the mutually agreed remedy subject to negotiation and agreement of mutually acceptable terms and conditions.

Sincerely yours,

H. Kaguchi

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